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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/642,532	08/18/2000	Chris Heegard	ALA-108	7791
23494	7590	07/11/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			AHN, SAM K	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/642,532	Applicant(s) HEEGARD ET AL.	
	Examiner Sam K. Ahn	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on amendment, 01/27/05.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-16 and 18-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,7-16,18-26 and 28-32 is/are rejected.
- 7) ☒ Claim(s) 3-5 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 7-16, 18-26 and 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Yanagi et al., cited previously (Yanagi) and Heppe, cited previously USP 4,654,854, (Heppe).

Regarding claims 1, 10, 15, 16, 21, 26 and 29, AAPA teaches an apparatus and a method for updating an adaptive element of a communication system wherein the apparatus (see Fig.1) comprises a quantizer or estimation circuit (120), an error calculator (160) and an adaptation controller (140), which are equivalent to the preferred embodiment of this instant application as illustrated in Fig.2.

However, AAPA does not teach the adaptation controller updating the adaptive element based on the decision quality indicator dependent value. AAPA further does not teach a decision quality estimator for computing one or more decision quality indicators of estimates and generating a decision quality indicator dependent value.

Yanagi teaches a system comprising an adaptive element (12 in Fig.2) wherein the coefficients of the adaptive element are being updated by the error signal

control circuit (20), which is further shown in Fig.4. Yanagi teaches the adaptation controller (27 in Fig.4) for controlling the updating of the adaptive element based on the decision quality indicator dependent value or first detected level signal, which is generated by the decision quality estimator (26 in Fig.4). Yanagi explains (note col.4, lines 15-58) that the error signal control circuit delivers the error signal to the adaptive element only when the signal value is above a threshold level or disabling/enabling the update of the adaptive element, and further explains that when the signal received is extremely small, the error signal becomes large, which is inaccurate. And describes (note col.1, lines 40-54) that during this situation the reliability is degraded. One skilled in the art would analyze that Yanagi teaches the decision quality estimator (26 in Fig.4) computing decision quality indicator of estimates (from 13). Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify AAPA's teaching by including Yanagi's teaching of the decision quality estimator receiving the estimates for the purpose of increasing reliability of the error signal generated and properly update the adaptive element during situations where the received signal is small and prevent inaccurate updating of the adaptive element, as taught by Yanagi.

However, AAPA in view of Yanagi do not explicitly teach wherein the one or more decision quality indicators or a syndrome calculator detects transmission errors in a window.

Heppe teaches (see Fig.3) forward error correction comprising one or more decision quality indicators (syndrome register) of a sequence of decision quality indicators in a window (309,311,312,206 and 207), wherein the window has a length that is a function of a forward error control code (C11 ~ Cz', note col.9, lines 63-67). Therefore, it would have been obvious to one skilled in the art at the time of the invention to implement modify AAPA in view of Yanagi's teaching and implementing Heppe's teaching of syndrome calculation when receiving errors from error generation calculation circuit, if not already implemented in Yanagi's teaching may only be referred differently, for the purpose of effectively calculating errors in the signal received and improve reliability in updating the adaptive element.

Regarding claims 7 and 28, AAPA in view of Yanagi and Heppe teach all subject matter claimed, as applied to claim 1 or 21. Yanagi further teaches the adaptation controller receiving an error signal and a first detected level signal (note col.5, line 51) or adaptation-disabling value. And although Yanagi does not explicitly teach a multiplexer, it would have been obvious to one skilled in the art at the time of the invention to include the multiplexer as there are two inputs with one output going to the adaptive element where the use of the multiplexer is well-known in the art.

Regarding claim 8, AAPA in view of Yanagi and Heppe teach all subject matter claimed, as applied to claim 1. And in regards to the further limitation of the adaptation-disabling value being zero is commonly practiced in the art to assign values of high or low, or zero or having certain level. Therefore, it would have been a matter of design choice to assign the adaptation-disabling value to be a zero value as it is well-known and commonly practiced in the art.

Regarding claim 9, AAPA in view of Yanagi and Heppe teach all subject matter claimed, as applied to claim 1. Yanagi further teaches adaptation controller (27) receiving first detected level signal or decision quality indicator dependent value (from 26) to determine if the update to the adaptive element should be supplied or not depending on the comparison to the predetermined threshold level. (note col.5, lines 44-65)

Regarding claims 11-14, 22-25 and 30-32, AAPA in view of Yanagi and Heppe teach all subject matter claimed, as applied to claim 10, 21 or 29. AAPA already discloses the adaptive element (100) being updated depending on the error. Further limitation of the adaptive element being an adaptive equalizer, carrier recovery circuit, timing recovery circuit and automatic gain control circuit all requires an adaptive element, such as taught by AAPA in view of Yanagi, and therefore, it would have been obvious to one skilled in the art at the time of the invention to implement the teaching in any system for the purpose of taking

advantage of the benefits it offers to the system being applied to, as explained earlier, for the purpose of increasing reliability of the error signal generated and properly update the adaptive element during situations where the received signal is small and prevent inaccurate updating of the adaptive element, as taught by Yanagi.

Regarding claims 18-20, AAPA in view of Yanagi and Heppe teach all subject matter claimed, as applied to claim 15. And Heppe further teaches the limitation of having the length of the window and wherein it is inherent that a block update is performed at a certain rate for synchronization purposes in any system. Heppe further teaches wherein the length of a window is equal to the size of a block of information or to the constraint length of the convolutional code ( $C_{11} \sim C_z$ , note col.9, lines 63-67).

***Allowable Subject Matter***

2. The indicated allowability of claims 3-6 is withdrawn based on the rejection as explained above.
3. Claims 3-5 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn  
7/4/05

  
TEMESCHEN CHEBRETNSAE  
PRIMARY EXAMINER

7/8/05